

STUDY OF EQUIPMENT IN THE U.S. SCRAP RECYCLING INDUSTRY



Prepared for the Institute for Scrap Recycling Industries, Inc.

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EXECUTIVE SUMMARY

ISRI commissioned this study in January of 2012 in order to determine equipment capacity and utilization within the U.S. scrap recycling industry. U.S. scrap recycling is a \$100 billion industry with major investments in equipment and services throughout the United States. The purpose of the study was to develop a credible quantification of how much scrap processing, handling and related equipment is employed in the scrap recycling industry in the United States.



The study was performed by SAI, a leading international business research firm with operations in all major regions of the world. Since 1977, SAI has provided an array of business research services to many of the world's largest and most successful corporations as well as to financial institutions, trade associations, and government agencies. SAI serves clients in materials, transportation, building/construction, packaging, capital equipment, and allied industries. SAI provides a comprehensive range of intelligence services designed to help leaders make better informed business decisions including market research, product and sales forecasting, competitive analysis, customer intelligence and strategic planning.

Key Findings of the study:

- Over \$14 billion of total investment spent in recycling equipment by the U.S. scrap recycling industry during the five year period from 2006-2011;
- Investment made per unit averaged \$200,000, although outlays varied significantly depending upon the specific piece of equipment purchased;
- Overall spending increased by 20 percent from 2008-2011, or over \$1.8 billion in total, which is due in part to the accelerated depreciation credit that was put into law. The financial windfall to the industry was a direct result of the RISE Act associated with the stimulus package developed in 2008;
 - o Scrap processors invested in new and/or higher value equipment as a result of the credit, often by-passing loan considerations in tight credit markets and providing equipment upgrades and expansion opportunities;
- Projected future investment of nearly \$15 billion is expected within the U.S. scrap recycling industry over the next five years; and
- Approximately 15 percent of total scrap equipment revenues for U.S. manufacturers of scrap recycling equipment are derived from export sales.

PROJECT METHODOLOGY

SAI, in coordination with ISRI, developed an online survey to assess the macro market valuation for processing and sorting/handling equipment in the U.S. scrap recycling industry, including an equipment export trends analysis. Additional primary field research (as well as review of available related secondary materials) was conducted to further probe insights into market data, including interviews with select survey respondents, key industry participants and other knowledgeable sources to address and satisfy the study objectives.

More than 190 scrap processing companies (both ISRI Members and non-members), as well as 75 scrap equipment manufacturers and distributors, located throughout the United States completed surveys. Respondents represented all revenue segments, with macro breakdowns as follows:

- Of scrap processors, 40 percent had 2011 revenues over \$20 million—with 24 percent over \$50 million and 14 percent over \$100 million; and
- Of equipment manufacturers, 46 percent had 2011 revenues over \$20 million—with 22 percent over \$50 million and 9 percent over \$100 million.



Based on completed surveys returned for the study, margin of error for the survey data results is estimated at +/-5 percent, with a confidence level of 95 percent. Senior SAI staff reviewed the survey results for accuracy and completeness, with follow-up calls to individual companies made as necessary to clarify and/or expand on existing responses.

SAI conducted additional primary and secondary research with leading companies to develop further perspectives on macro industry data and trends. SAI then extrapolated the industry analysis and market data on equipment usage, capacity and utilization as well as investment trends, export activity and future needs from survey results, primary interviews and secondary material to compile the report.

STUDY RESULTS

The U.S. scrap recycling industry generated nearly \$100 billion of total revenue in 2011, with more than \$60 billion coming from domestic sales. Those sales were across multiple commodity lines, including ferrous, non-ferrous (e.g., aluminum, copper and brass alloys, and zinc), paper, rubber, textiles, glass, and electronics. For background, see page 10 for data generated by ISRI from U.S. Department of Commerce data on industry activities.

CURRENT INVESTMENT IN EQUIPMENT

The scrap recycling industry invested nearly \$9 billion in recycling equipment through the U.S. between 2006 and 2011. Processing equipment accounted for 53 percent of total investments, while sorting/handling equipment accounted for 47 percent of the total.

Although the equipment purchased by companies within the industry ranged from attachments to complete shredding plants with costs ranging from \$10,000 to \$50 million, the average investment per unit was \$200,000. Unit costs increased significantly in 2009-2011, as the impact of the depreciation credit resulted in newer, more expensive equipment being purchased rather than used or less expensive units.

THE SCRAP
RECYCLING INDUSTRY
INVESTED NEARLY
\$9 BILLION
IN RECYCLING
EQUIPMENT
THROUGH
THE U.S. BETWEEN
2006 AND 2011

Current replacement value of equipment purchased prior to 2006 is estimated at \$15 billion, with value split between processing (56 percent) and sorting/handling (44 percent) equipment.



CAPACITY UTILIZATION

SAI derived estimates for equipment units, capacity and utilization from industry survey results and supporting interviews with leading industry participants to develop an entire market extrapolation. SAI correlated responses on equipment units currently in operation for scrap processors against responses from equipment manufacturers on units sold into the market to develop a high level overview of total units currently operating in the United States.

For purposes of this study only, the overall industry utilization rate for scrap recycling equipment was estimated to be 55 percent [—based on operating hours for scrap processing facilities of 260 days/year (up to 10-12 hours of operation per day)].



Ongoing requirements for scrap processing facilities to upgrade equipment will continue in the coming years. The extent to which upgrades will occur in the industry will depend upon the degree and types of incentives provided, combined with the need to replace older and outdated equipment with more efficient, higher value units that have more capacity and faster cycle

times, among other improved features. Although many facilities have existing equipment available on site, many units are over 10-20 years old and future planned investments will be required to support future industry growth.

FUTURE INVESTMENT IN EQUIPMENT

Opportunity exists for continued growth in the industry, as the scrap recycling industry continues to expand both domestically and internationally. It is projected that the scrap recycling industry will purchase approximately \$14.5 billion of equipment for installation within the United States over the next five years, including:

- Five billion dollars in the next 1-2 years (2012-2013); and
- Nearly \$9.5 billion planned in the next 3-5 years (2014-2016).

IT IS PROJECTED THAT THE SCRAP RECYCLING INDUSTRY WILL PURCHASE APPROXIMATELY **\$14.5 BILLION** IN EQUIPMENT FOR INSTALLATION WITHIN THE U.S. OVER THE NEXT FIVE YEARS.

Equipment manufacturers also anticipate strong growth in expanding export markets for scrap recycling equipment, with a 7 percent Compound Annual Growth Rate in sales through 2015 (see export section on pages 8-9).

EFFECT OF THE 2008 ACCELERATED DEPRECIATION CREDIT ON RECYCLING EQUIPMENT PURCHASES

The October 2008 federal stimulus package contained a provision advocated by the recycling industry known as “RISE,” or the Recycling Investment Saves Energy Act. RISE provides a 50 percent accelerated depreciation allowance in the first year for purchases of eligible recycling equipment. Accelerated depreciation is a very common incentive often used by federal and state governments to spur manufacturing, production, or certain purchasing behaviors, or to achieve certain policies. According to estimates published by the Congressional Budget Office (CBO) in 2008, the benefit of this law to the industry was expected to be a minimum of \$162 million over 10 years. As part of this equipment study, SAI evaluated the actual impact and effectiveness in spurring investment during its initial four years.



RISE is limited to eligible recycling equipment purchased after August 31, 2008. Eligible equipment is defined to specifically include only machinery and equipment which is used exclusively to collect, distribute, or recycle scrap paper, metal, plastic, glass, textiles, rubber, packaging, and electronics. RISE provides a purchaser of eligible recycling machinery or equipment

with the option to depreciate 50 percent of the cost of that machinery or equipment in the first year. Only qualified reuse and recycling property that is used exclusively to process materials (including sorting) and that has a useful life of at least five years is eligible for the 50 percent accelerated depreciation allowance under RISE. Rolling stock, real estate, and buildings are not eligible for the depreciation allowance under RISE.

In order to use the bonus depreciation under RISE, eligible machinery or equipment must be placed into service after August 31, 2008. However, that same equipment must not have been ordered prior to August 31, 2008. RISE is purely voluntary. Some recycling equipment purchasers, based on their own tax situation, may elect not to use the accelerated depreciation schedule. Instead, they may elect to straight-line depreciate machinery or equipment equally over five years or more.

BASED ON THE
INDUSTRY SURVEY RESULTS,
THE POTENTIAL EXISTS
FOR AN ADDITIONAL
\$3 BILLION
IN EQUIPMENT INVESTMENT
OVER THE NEXT FIVE YEARS.

SAI concluded that the accelerated depreciation tax credit passed in 2008 had a significant impact on equipment purchasing decisions in the industry, with 53 percent of survey respondents increasing investments since then as a direct result. Companies indicated equipment investments increased due to the tax credit, generating an additional \$1.8 billion in spending from 2008-2011, out of a total of nearly \$9 billion invested—far in excess of CBO’s estimate of \$162 million. Despite tight credit markets following the 2008 recession, the depreciation credit allowed buyers to bypass loan approvals for equipment needs and upgrades.

Reasons for increased investment as a result of the credit include:

- Purchased high quality, higher value equipment than would have originally been planned;
- Permitted companies to make business investment decisions without having to take out loans;
- Allowed investment in other activities as a result of tax savings;

- Accelerated or promoted purchasing strategy;
- Doubled typical investment amount for some companies;
- Motivated some companies to expand operations;
- Purchased new versus used equipment; and
- Led some companies to purchase equipment from failing businesses.

Based on the industry survey results, the potential exists for an additional \$3 billion in equipment investment over the next five years (out of a total \$15 billion). Tax savings resulting from RISE and the bonus depreciation credit allowance will continue to incentivize companies to make decisions now rather than delaying purchases.

Increasing the bonus depreciation to 100 percent for new equipment put into service may expand the potential for new investment. Additionally, increasing the depreciation allowance limit in future years to its previous maximum level of \$500,000 will allow scrap processors to use the bonus depreciation for larger equipment purchases.

SPECIFIC EQUIPMENT TRENDS



The most likely types of processing equipment to be targeted for potential investment are trucks and trailers, with more than a third of all companies indicating future needs, followed by balers, shears and portable shears. Combined, these categories make up over 75 percent of all future processing equipment investment needs.

For trucks and trailers, among the items driving future investment needs are:

- Improved fuel efficiency;
- Lightweight construction; and
- Increased capacity.

For balers, shears, and portable shears, the key drivers for new equipment investment include:

- Durability (e.g., wear parts);
- Increased capacity/faster cycle times;
- Noise reduction;
- Safety mechanisms; and
- Service parts availability/dealer support and warranty.

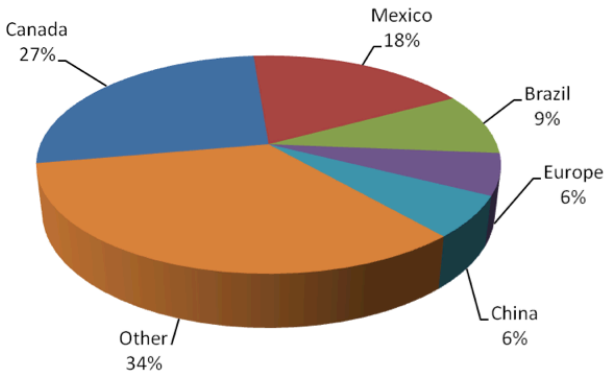
U.S. SCRAP EQUIPMENT EXPORT TRENDS

As part of the study, SAI examined investments in U.S.-manufactured scrap recycling equipment by those outside the United States. This was done to help identify trends in U.S. scrap recycling equipment exports and the role incentives or changes in U.S. export policies could further promote the export of U.S. manufacturing equipment into the various overseas markets.

Based on responses from leading scrap equipment manufacturers, SAI measured total U.S. scrap equipment export sales from 2008-2011 and expected future export sales growth from 2012-2015.

SAI analysis revealed that U.S. recycling equipment manufacturers estimate that 15 percent of total scrap equipment revenues are currently derived from export sales. While total exports for scrap equipment sales declined from 2008-2011 as a result of the global financial crisis, real potential for future growth is anticipated through 2015.

U.S. scrap equipment export sales by country 2011



MARKET BREAKDOWN

- Canada and Mexico accounted for nearly 47 percent of all export sales by U.S. scrap equipment manufacturers in 2011.
- Brazil, Europe (as a region), and China combined for 23 percent of total export sales.
- Additional significant exports to countries include Japan and Chile—each at 6 percent, Australia at 4 percent, and South Korea at 3 percent.

TRENDING IN EXPORT SALES

U.S. manufacturers' scrap equipment exports sales declined from 2008 (\$485 million) to 2011 (\$435 million), a decrease of 10 percent in total export sales in that period as a result of a challenged global economy. However, U.S. scrap equipment export sales are forecast to increase by 7 percent Compound Annual Growth Rate from 2011-2015.

Leading drivers include:

- Increased consumption of scrap material/ expansion of recycling programs globally;
- Improvement in quality and capabilities of U.S. equipment over other countries;
- Better marketing programs, such as the internet, reaching global markets; and
- Use of global distribution agreements with major OEMs.

U.S. SCRAP EQUIPMENT
EXPORT SALES ARE
FORECAST TO
INCREASE BY
7 PERCENT
COMPOUND ANNUAL
GROWTH RATE
FROM 2011-15.

Export promotion activities and incentives would help to further boost the sales of U.S. manufactured equipment for the scrap recycling industry beyond that which is already forecast above. The scrap recycling industry is truly a global industry – with recycling activities in one form or another occurring in virtually every country around the world. However, state-of-the art equipment and technologies for recycling these commodities is available from only a subset of these countries.



According to the Bureau of International recycling (BIR), more than 600 million tonnes of recyclables are processed for recycling each year. With an annual turnover of more than \$200 billion, the scrap recycling industry is a key driver for tomorrow's sustainable development. BIR estimates that approximately 10 percent of this amount – or \$20 billion annually – is spent on new technologies, research and development that contribute to creating high-skilled jobs and making recycling more efficient and environmentally sound.

In recent years, many developed and developing countries have introduced specific recycling and environmental performance targets aimed at encouraging people to recycle. This, along with increased labor rates in China and other countries, is driving the shift from dependence upon manual labor to the need to introduce mechanized equipment in these recycling operations. The U.S. market is primed to supply these needs.

Recycling goes far, far beyond the bin at the edge of the curb. In fact, in 2011 alone, more than 135 million metric tons of scrap metal, paper, plastic, glass, textiles, rubber and electronics, valued at more than \$100 billion, were manufactured into specification grade commodities by the scrap recycling industry in the United States. These commodities were sold as valuable feedstock material to industrial consumers in the United States and in more than 160 countries around the world and contributed nearly \$39 billion in export sales, significantly helping the U.S. trade balance.

The U.S.-based scrap recycling industry is a sophisticated, capital-intensive industry that employs approximately 138,000 workers in the United States. As the first link in the manufacturing supply chain, scrap recycling has been integral to the U.S. economy, global trade and resource sustainability for more than 200 years.

U.S. Economy

	2010	2011
Industry Size	\$77 Billion	\$100 Billion
Employment (Yearly Average)	107,500	137,640
Volume of Scrap Material Annually Processed (Metric Tons)		
Iron and Steel	66,000,000	74,000,000
Paper	46,800,000	47,870,000
Aluminum	4,600,000	5,170,000
Copper	1,900,000	1,910,000
Lead	1,200,000	1,230,000
Zinc	160,000	220,000
Plastic (bottles)	655,000 (2009)	706,000 (2010)
Electronics	3,500,000	+3,500,000
Tires (# of tires)	90,000,000	100,000,000

Environment

Scrap recycling reduces greenhouse gas emissions by requiring significantly less energy to manufacture products from recyclables than virgin materials and by avoiding landfilling.

Energy saved using recycled materials is up to:

92% for aluminum	90% for copper	87% for plastic
68% for paper	56% for steel	34% for glass

Scrap recycling conserves natural resources:

Recycling one ton of:

- > Paper saves 3.3 cubic yards of landfill.
- > Steel conserves 2500 lbs. of iron ore, 1400 lbs. of coal and 120 lbs. of limestone.
- > Aluminum conserves more than 5 metric tons of bauxite ore and 14 megawatt hours of electricity.

Cleaner air and water result from safely removing potentially hazardous materials and keeping them out of landfills:

- > Mercury switches removed from older automobiles
- > Lead recovered from computer monitors

Global Trade

	2010	2011
Value of Scrap Commodities Exported Helping U.S. Trade Balances	\$29.6 Billion	\$39.2 Billion
Metric Tons of Scrap Exported Including:	45.3 Million	51.7 Million
Iron and Steel (ex-Stainless and Alloys)	18.7 Million	22.7 Million
Paper	18.9 Million	21.1 Million
Aluminum	1.9 Million	2.1 Million
Plastic	2.0 Million	2.1 Million
Nickel, Stainless and Alloy	1.9 Million	1.6 Million
Copper	1.0 Million	1.2 Million
Lead	44,000	31,000
Zinc	78,000	86,000
Rubber	172,000	135,000
Number of Countries Scrap was Exported to and Leading Destinations/Value	158 Countries	161 Countries
China	\$8.5 Billion	\$11.5 Billion
Canada	\$3.0 Billion	\$3.7 Billion
Turkey	\$1.5 Billion	\$2.4 Billion
South Korea	\$1.7 Billion	\$2.1 Billion
Taiwan	\$1.4 Billion	\$1.9 Billion
United Kingdom	\$1.1 Billion	\$1.4 Billion
Germany	\$0.7 Billion	\$1.2 Billion
India	\$0.8 Billion	\$1.0 Billion
Mexico	\$1.0 Billion	\$1.0 Billion
Italy	\$0.7 Billion	\$0.9 Billion
Japan	\$0.6 Billion	\$0.6 Billion
Hong Kong	\$0.6 Billion	\$0.5 Billion

